Guadalupe River Project

Confirmation Soil Sampling Report
Reach 2 River Channel

March 1994

Prepared for the

Santa Clara Valley Water District

Prepared by

CH2M HILL

Prepared Under the Direction of

John Lowe, CIH

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Guadalupe River Project
Confirmation Soil Sampling Report
Reach 2 River Channel

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List of Acronyms and Abbreviations

B	Bottom
Cal-OSHA	California Occupational Safety and Health Administration
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
Corps	U.S. Army Corps of Engineers
DI	Deionized Water
District	Santa Clara Valley Water District
DLM	Designated Level Methodology
EPA	Environmental Protection Agency
I	Interstate
N	North
Pb	lead
PCBs	Polychlorinated biphenyls
PPE	Personal Protective Equipment
QC	Quality Control
R	Resampled
RWQCB	Regional Water Quality Control Board
S	South
SS	Shallow Sample
STLC	Soluble Threshold Limit Concentration
SVOCs	Semivolatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
TPH-d	Total Petroleum Hydrocarbon as diesel
TRPH	Total Recoverable Petroleum Hydrocarbon
TTLC	Total Threshold Limit Concentration
VOCs	Volatile Organic Compounds
W	West
WET	Waste Extraction Test

Confirmation Soil Sampling Report
Reach 2 River Channel
Guadalupe River Project

1.0 Introduction

The Guadalupe River Project is a joint flood control project of the U.S. Army Corps of Engineers (Corps) and the Santa Clara Valley Water District (District) (Figure 1-1). This project is divided into three reaches and includes channel improvements and bridge demolition and replacement along the Guadalupe River Between I-880 and I-280 in San Jose, California (Figure 1-2). As a local sponsor of the project, the District is responsible for conducting environmental investigations to assess the existence and extent of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and non-CERCLA substances within the construction corridor, for cleaning up CERCLA substances within the corridor before project construction, and for providing the right-of-way necessary prior to project construction. The Corps is responsible for the remediation of non-CERCLA substance contamination during construction of the flood control improvement project. CERCLA material classifying as hazardous waste or requiring worker personal protective equipment (PPE) greater than level D must be delineated for remediation prior to Corps construction activities. Nonhazardous, designated waste can be managed during Corps construction provided the work can be accomplished in level D PPE.

For this project the following definitions apply:

- CERCLA material - Soil or groundwater that contains chemical constituents addressed in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at levels that are considered hazardous or that require worker protection above level D personal protective equipment.

- Non-CERCLA material - Soil or groundwater that does not contain chemical constituents addressed in the Comprehensive Environmental Response, Compensation and Liability Act or does not require worker protection above level D PPE.

- Hazardous waste - Waste that is defined as hazardous by Title 22 of the California Code of Regulations (CCR) or by 40 Code of Federal Regulations (CFR) 261.3.

- Level D PPE - Standard work clothing, including hard hat, work boots with steel toes, gloves, and coveralls as set forth in Title 8, California Code of Regulations Section 5192 (Cal-OSHA) and 29CFR1910.120 (OSHA).

The District is specifically responsible for remediating CERCLA material, i.e., material that is either a hazardous waste or that requires worker protection greater than level D. Non-CERCLA material, i.e., inert and designated waste, will be managed during flood control project construction. These definitions were used to classify waste and evaluate remedial alternatives.

The purpose of this report is to describe the confirmation soil sampling program and present the analytical results of the sampling associated with the excavation and off-site disposal of waste from the Reach 2 Channel area along the Guadalupe River in San Jose, California. This Confirmation Sampling Report was prepared under the direction of and reviewed and approved by a Certified Industrial Hygienist (CIH).

1.1 Background

The project is divided into three reaches to facilitate flood control construction contracting and sequencing. Construction on the Reach 1 (I-880 to Hedding Street) segment is nearing completion. Reach 2 (Hedding Street to Coleman Avenue) is in the contract advertisement/bidding phase and Reach 3 (Coleman Avenue to I-280) is still in the design phase. As part of the District's environmental investigation of the project corridor, soil sampling was conducted within the river channel area of the Guadalupe River. Based on the results of that sampling, soil from three areas in the river channel in Reach 2 classified as CERCLA material and were subsequently excavated by the District. Details of the sampling and analysis program in the river channel in Reach 2 are described below.

Sampling within the Reach 2 project segment river channel included collecting 29 soil samples from a total of 24 sampling locations. Samples were numbered SS-22-1 through SS-22-17B. The analyses performed on all samples included metals and total recoverable petroleum hydrocarbons (TRPH). Selected samples were also subjected to a variety of other analyses including total petroleum hydrocarbons as diesel (TPH-d), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs), waste extraction tests (WET) using both acid and deionized water (DI) as extraction media, and the toxicity characteristic leaching procedure (TCLP). The analyses selected for any given sample depended on the results of a historical evaluation and analytical results of samples collected from sites adjacent to the river channel.

The analytical results indicated that, of all the analytes, only lead (Pb) concentrations from specific samples constituted CERCLA material. The approach taken for the river channel was to treat these specific sample localities as "hot spots" based on the distribution of concentrations detected in the sampling and analysis program. Specifically the locations designated as hot spots included sample localities SS-22-5, SS-22-14, and SS-22-15. The procedure presented for remediating these isolated hot spots was to excavate 20 yd^3 of soil from the sampling location and then perform confirmation sampling of the bottom and side walls of the excavation. If the confirmation sample analytical results indicated that CERCLA material still remained in the excavation additional soil would be excavated until the confirmation sample results indicated that no CERCLA material remained.

This approach was presented in a Soil Management Plan (August 26, 1993) that was forwarded to the Regional Water Quality Control Board (RWQCB) for their review and approval. A letter from the RWQCB, dated September 27, 1993, approving of the approach is included as Appendix A.

The hot spot areas remediated as a result of the findings of the District's investigations are designated HS-22-05, HS-22-14, and HS-22-15 to correspond with shallow soil sampling locations SS-22-5, SS-22-14, and SS-22-15, respectively. Pb was detected in each of these areas at concentrations that caused the soil to be classified as a CERCLA material. In accordance with the agreement between the District and the Corps, all CERCLA material must be remediated from the project corridor prior to work by the Corps contractor.

Additional information about the Reach 2 Guadalupe River channel area can be found in the following CH2M HILL reports:

- The Guadalupe River Project Remedial Investigation/Feasibility Study report in preparation,
- The Guadalupe River Project Soil Management Plan, Flood Control Project Construction Reach 2, August 26, 1993,
- Field Investigation Final Workplan for Guadalupe River Project, I-880 to I-280, San Jose, California, February 1993,
- Acquisition Properties Report, Guadalupe Corridor Project, San Jose, California, December 1991, and
- Project Alignment Report, Guadalupe Corridor Project, San Jose, California, December 1991.

1.2 Purpose and Scope

1.2.1 Purpose

The purpose of the confirmation soil sampling program is to document areas that were remediated to meet prescribed constituent levels, and to guide the excavation process by identifying areas that require additional soil removal during the remediation activities. This report documents the confirmation sampling performed, presents the analytical results and discusses their significance, and provides the District with a statement of suitability for flood control construction to be performed in level D PPE.

1.2.2 Scope

The scope of the confirmation soil sampling plan was to collect, from the bottom and sides of each excavation, samples at a sufficient frequency to provide, at a suitable level of confidence, documentation that all CERCLA material was removed from the sites. The scope included sampling the bottom and side walls of each excavation and shipping the samples to the District's contract laboratory for analysis.

2.0 Sampling Program

Soil samples were collected from the sides and bottoms of the excavations by CH2M HILL personnel and sent to the District's contract laboratory for analysis to confirm that the waste was removed from each location. The samples were submitted to the laboratory on an expedited turnaround basis to allow additional excavation to proceed with minimal delay should additional excavation prove necessary to remove remaining waste.

Confirmation samples were initially collected at a frequency of four from each location. The approximate locations of the completed excavations are shown on Figure 2-1. Fifteen confirmation soil samples were collected from the three sites. This includes 3 locations where addition excavation occurred and the excavation was resampled one or more times before the target cleanup criteria were met.

Resampling was conducted in areas where additional material was excavated based on the analytical results from initial confirmation samples. Material that classified as CERCLA material was removed from the sites as was underlying soil that contained contaminants that require worker protection above level D, per the agreement between the District and the Corps. Excavation guidelines for material from the sites included no total Pb greater than the total threshold limit concentration (TTLC) or soluble Pb greater than the soluble threshold limit concentration (STLC).

2.1 Sampling Methodology

2.1.1 Sampling Procedures

Confirmation soil samples were collected by CH2M HILL personnel by hand using disposable latex rubber gloves. Samples were placed in glass jars, labeled, sealed and placed in a cooler containing blue ice. The glass jars were supplied by the District's contract laboratory, Curtis and Tompkins, Limited, Analytical Laboratory of Berkeley, California. Information contained on the sample labels included the sample number, date collected, time collected, the name of the sampler, the project name and number, and the test procedures required. The sampling gloves were disposed of between the collection of each sample. All samples were sent to the District's contract laboratory for analysis on a rapid turnaround basis.

2.1.2 Decontamination Procedures

Because sampling was performed by hand using disposable gloves, there was no sampling equipment that required decontamination. The gloves were changed between each sample and placed in the PPE disposal bag along with used tyveks and rubber booties. The bag was then disposed of by placing it in the waste and shipping it to the disposal site.

2.1.3 Health and Safety Procedures

Field work was conducted according to the site specific health and safety plan dated February 10, 1993 and amended on February 23, 1993 and August 27, 1993. The plan provides site characteristics, waste characteristics, an evaluation of potential hazards on the site, safety procedures for conducting field work, safety and monitoring equipment for conducting field tasks, and emergency information. The site safety plan was at the site during field work.

2.2 Laboratory Analysis

All samples were analyzed by standard EPA or state approved methods. The analyses were performed by Curtis & Tompkins, Berkeley, California. Analyses performed included total lead and soluble lead. Chemical parameters selected for analysis were based on constituents detected in previous samples collected from the river channel in Reach 2 that exceeded regulatory criteria for hazardous waste or would require worker PPE greater than level D. The sample containers, sample preservation, and maximum laboratory holding time for the analyses are listed below.

Analytical Method	Matrix	Container	Preservation	Holding time
Metals (Pb)	Soil	1-500 ml wide mouth jar	cool 4°C	6 months

The laboratory supplied all needed containers.

2.3 HS-22-05 Site

2.3.1 Number of Samples Collected

A total of 7 confirmation samples was collected from the HS-22-05 excavation. Of this number, 3 sample locations were resampled after additional soil removal because the initial sample results did not meet the established guidelines, i.e., total Pb less than the TTLC or soluble Pb less than STLC.

2.3.2 Sampling Locations

As described above, samples were collected at the bottom and from the north, south, and west walls of the excavation. Sample locations for the HS-22-05 excavation are shown on Figure 2-2. The sample descriptions indicate the following:

- The two digit number is the number of the original river channel sampling point.
- The letter description indicates the bottom (B), north wall (N), south wall (S), or west wall (W) of the excavation.
- The "R" following some of the sample numbers indicates that it is a resampling of the original sample location.
- The number 2 following "R" indicates that the location was resampled a second time.

2.4 HS-22-14 Site

2.4.1 Number of Samples Collected

Four confirmation samples were collected from the HS-22-14 excavation. No sample locations had to be resampled because initial sample results did not meet the established guidelines noted in Section 2.3.1.

2.4.2 Sampling Locations

Samples were collected at the bottom and from the north, south, and west walls of this excavation. Sampling locations are shown on Figure 2-3 for the HS-22-14 excavation. Sample designations are described in Section 2.3.2.

2.5 HS-22-15 Site

2.5.1 Number of Samples Collected

Four confirmation samples were collected from the HS-22-15 excavation. No sample locations had to be resampled because initial sample results did not meet the established guidelines noted in Section 2.3.1.

2.5.2 Sampling Locations

Samples were collected at the bottom and from the north, south, and west walls of this excavation. Sampling locations are shown on Figure 2-4 for the HS-22-15 excavation. Sample designations are described in Section 2.3.2.

3.0 Analytical Results

Tables 3-1, 3-2, and 3-3 contain summaries of the results of chemical analyses performed on the samples collected from the HS-22-05, HS-22-14, and HS-22-15 sites. The columns on the tables indicate the sample number; the date sampled; the results of total Pb analyses; the results of acid WET Pb analyses; and whether the results of all analyses performed on a sampled meet the established guidelines (as indicated by the + sign), or the sample failed to meet the established guidelines and the location had to be further excavated and resampled (the replacement sample number being placed in the column). Table 3-1 also includes a column containing the results of WET analyses performed using deionized (DI) water as an extraction medium. Copies of the actual laboratory data sheets and quality control (QC) data are included in Appendix C.

4.0 Discussion of Results

4.1 Evaluation Guidelines

Guidelines for evaluating whether the waste was removed include constituent concentrations for total Pb less than the TTLC or soluble Pb less than the STLC. Criteria for classifying the remaining soil as non-CERCLA designated waste involved conducting an STLC analyses using deionized water as an extractant and comparing the results to Designated Level Methodology (DLM) criteria approved by the RWQCB as part of the Guadalupe River Project Soil Management Plan for Flood Control Project Construction Reach 2, dated August 26, 1993..

The Designated Level Methodology (DLM) uses the following relationship to evaluate whether a waste is a designated waste or an inert waste:

$$\text{Total Designated Level for a constituent of a liquid waste (mg/l of waste)} = \text{Water Quality Goal (mg/l)} \text{ x } \text{Environmental Attenuation Factor}$$

The water quality goal for a constituent is multiplied by an environmental attenuation factor and the product is compared to the concentration of that constituent in the WET extract from the waste material with deionized water as an extractant. Where the concentration of the constituent exceeds the designated level criteria it is considered a designated waste. Material left in place and conforming to the above guidelines does not constitute a designated waste and is considered inert.

Advisory levels in soil were estimated for Pb to evaluate the suitability of level D PPE for future construction activities. These levels were based on potential inhalation exposure to Pb in nuisance dust that could be generated during construction. Description of the assumptions and calculations used to estimate these soil advisory levels is presented in a memorandum prepared by a CIH and attached as Appendix B. Workers equipped in level D protection may enter and work in areas with chemical concentrations in soil that fall at or below these advisory levels. The results from this evaluation show that the excavation guidelines for waste and soil from the river channel sites are equivalent or lower than the advisory levels. Therefore, workers equipped in level D protection may enter and work in areas where waste and soil with concentrations exceeding the excavation guidelines have been removed.

4.2 River Channel Sites

Confirmation sample results given in Tables 3-1 through 3-3 include both those that were above the cleanup guidelines as well as those below the guidelines. The tables indicate if a sample did not meet the established guidelines, the number of the sample or samples that replaced the original sample after additional material was removed. Of the total of 15 samples collected from the three sites, 12 of them were below the cleanup guidelines and 3 exceeded the guidelines and required additional excavation and resampling to be performed at those locations to document that all waste was removed to below guideline concentrations. The results of the confirmation sampling performed indicate that the waste that exceeded the confirmation guidelines was removed from the sites. The material that remains falls within the guidelines and, as such, is considered by CH2M HILL's CIH to be acceptable for working in level D PPE. Based on the confirmation sampling, the remaining soil is considered inert waste according to DLM criteria established by the RWQCB. The sequence of soil removal and confirmation sampling for each of the three areas in the river channel in Reach 2 are provided below.

4.2.1 HS-22-05 Site

Shallow soil in sample SS-22-5 classified as a CERCLA material based on a total Pb concentration of 230 mg/kg and a soluble Pb concentration 12 mg/l. Total Pb concentrations detected in adjacent samples SS-22-4A and SS-22-5A were 7 mg/kg and 12 mg/kg, respectively, which bracketed the extent of the CERCLA soil. Approximately 20 yd^3 of soil was excavated from this sample location SS-22-5 and confirmation samples were collected from the bottom of the excavation and the north, south and west side walls of the excavation (because the excavation was into the west bank of the river, there was no east wall the excavation). Analytical results given in Table 3-1 for total Pb in the bottom and side wall samples indicate that the total Pb concentration of the material in the bottom of the excavation and the west side wall classifies it as non-CERCLA material. The total Pb concentrations detected in the material in the north and south side walls were greater than 10 times the STLC, thus, a WET analysis was performed to evaluate the soluble Pb concentration.

The results of these analyses indicated that the material in the north and south sidewalls still constituted a CERCLA material. An additional 10 to 15 yd^3 of soil was removed from each of the north and south sidewalls and new confirmation samples were collected from the new north and south sidewalls. The resample results indicated that the total Pb concentration detected in the south sidewall sample was below the concentration that would classify the soil as a CERCLA material. However, the detected total Pb concentration in the north sidewall was, again, greater than 10 times the STLC, and the soluble Pb concentration exceeded the non-CERCLA material criteria. Therefore, an additional 10 to 15 yd^3 of soil was excavated from the north sidewall and a new confirmation sample was collected. The total Pb concentration detected in that sample was below the concentration classifying the soil as a CERCLA material. In this manner, all the CERCLA material was removed from the HS-22-05 site.

A WET using DI water as an extraction medium was performed on the final sample collected from both the north and the south side walls of the HS-22-05 excavation. The results of the analyses of both these samples indicated that no soluble Pb was detected in either sample extract. These results indicate that the soil, as well as being non-CERCLA material is also inert based on DLM criteria for Pb.

4.2.2 HS-22-14 Site

Soil in sample SS-22-14 classified as a CERCLA material based on a total Pb concentration of 120 mg/kg, which yielded a soluble Pb concentration of 5.8 mg/l. Approximately 20 yd^3 of soil was excavated from the site of SS-22-14 and confirmation samples were collected from the bottom and the north, south, and west side walls of the excavation. Total Pb concentrations detected in all of these samples were above 10 times the STLC and are given in Table 3-2. However, soluble Pb concentrations detected from the WET leachate extracted from each sample were below concentrations that would classify the soil as a CERCLA material, therefore, no further excavation was required at this site to characterize the soil as a non-CERCLA material.

4.2.3 HS-22-15 Site

Soil in sample SS-22-15 classied as a CERCLA material based on a total Pb concentration of 180 mg/kg, which yielded a soluble Pb concentration of 7.9 mg/l. Approximately 20 yd^3 of soil was excavated from the site of SS-22-15 and confirmation samples were collected from the bottom and the north, south, and west side walls of the excavation. Total Pb concentrations detected, and given in Table 3-3, in all of these samples were above 10 times the STLC. However, soluble Pb concentrations detected from the WET leachate extracted from each sample were below concentrations that would classify the soil as a CERCLA material. No further excavation was required at this site to characterize the soil as a non-CERCLA material.

5.0 Conclusions

The results of confirmation soil sampling performed at the Reach 2, Area 22 river channel sites indicate that the material left in place does not constitute either a CERCLA material or a designated waste as discussed in the Soil Management Plan, dated August 26, 1993. The material conforms to the established guidelines, i.e., no total Pb greater than the TTLC or no soluble Pb greater than the STLC. The material left in place within the Reach 2, river channel is suitable for working in level D PPE.

Table 3-1
Confirmation Soil Sampling Analytical Results
Guadalupe River Project
Reach 2 River Channel
HS-22-05

Sample Number	Date Sampled	Total Result (mg/kg)	Acid WET Result (mg/l)	DI WET Result (mg/l)	Meets Criteria (+) or Replaced by #
05B	11/19/93	39	-	-	+
05N	11/19/93	350	15	-	05NR
05NR	12/20/93	180	8	-	05NR2
05NR2	1/04/94	11	-	ND	+
05S	11/19/93	680	28	-	05SR
05SR	12/20/93	16	-	ND	+
05W	11/19/93	33	-	-	+

Notes:

-	Not Analyzed
ND	Not Detected

Table 3-2
Confirmation Soil Sampling Analytical Results
Guadalupe River Project
Reach 2 River Channel
HS-22-14

Sample Number	Date Sampled	Total Result (mg/kg)	Acid WET Result (mg/l)	Meets Criteria (+) or Replaced by #
14B	11/19/93	69	2.3	+
14N	11/19/93	60	1.8	+
14S	11/19/93	120	3.4	+
14W	11/19/93	56	1.8	+

Table 3-3
Confirmation Soil Sampling Analytical Results
Guadalupe River Project
Reach 2 River Channel
HS-22-15

Sample Number	Date Sampled	Total Result (mg/kg)	Acid WET Result (mg/l)	Meets Criteria (+) or Replaced by #
15B	11/19/93	54	1.0	+
15N	11/19/93	81	3.2	+
15S	11/19/93	86	3.7	+
15W	11/19/93	100	2.9	+

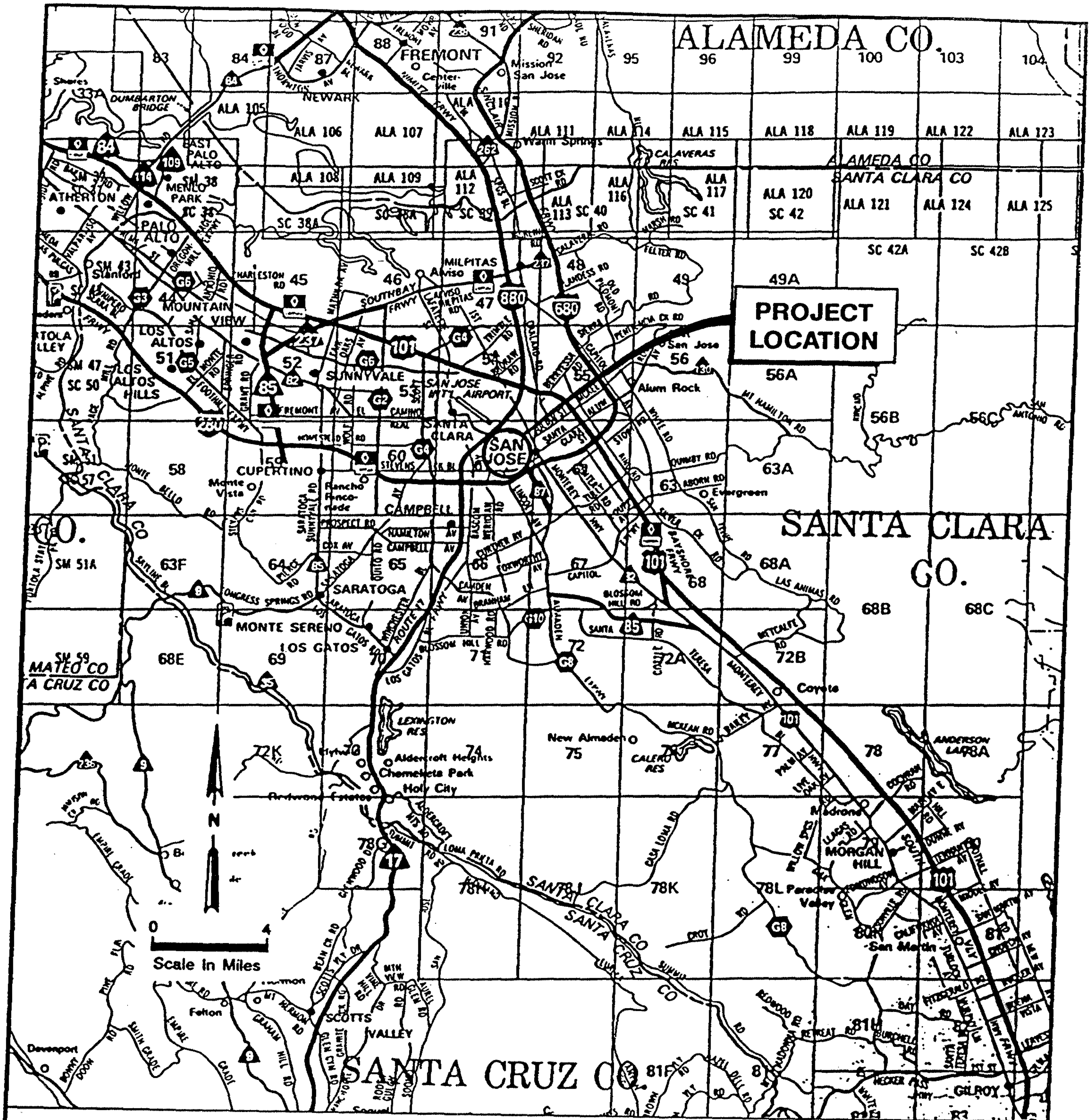


FIGURE 1-1
PROJECT LOCATION MAP

San Jose, California

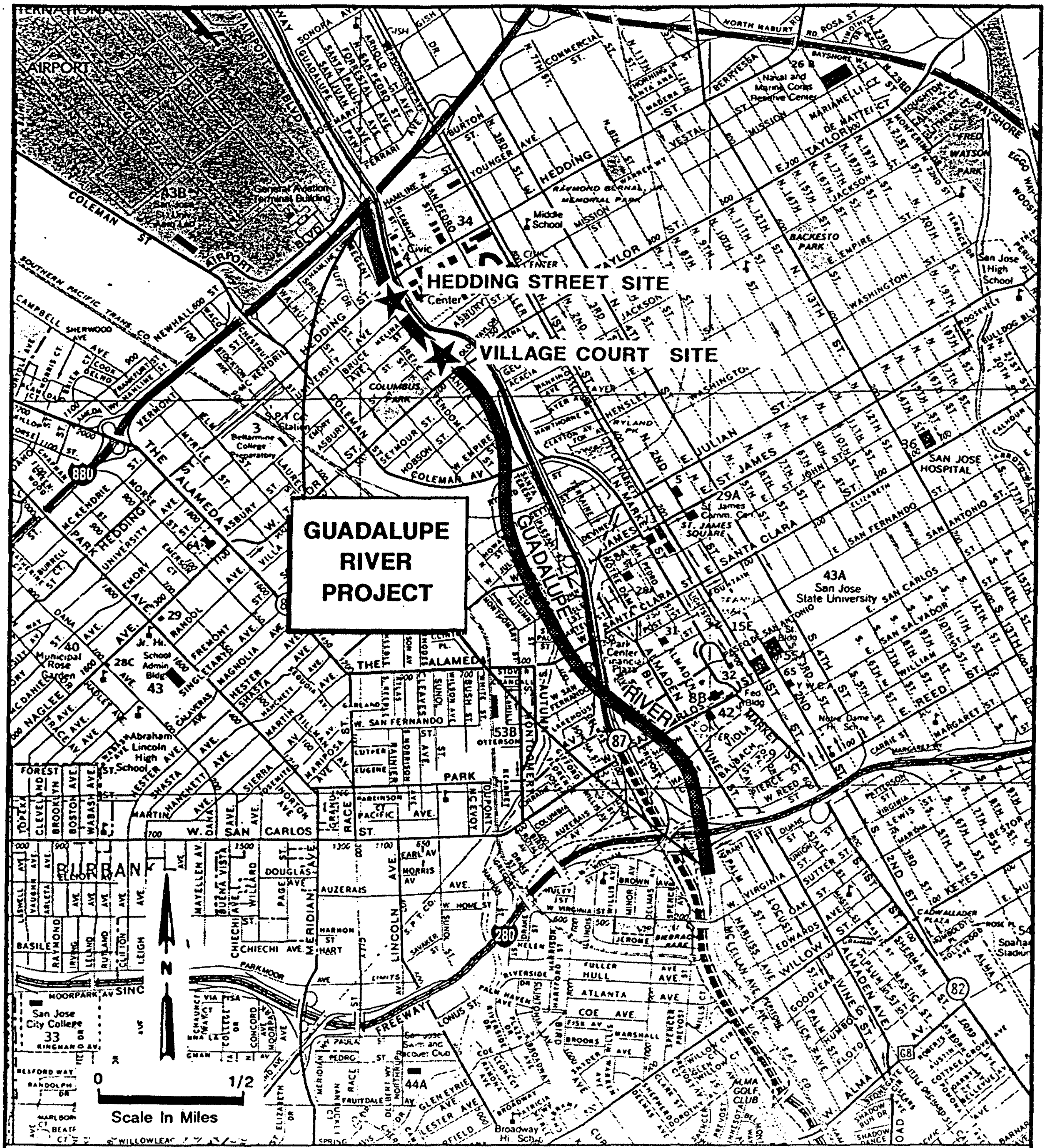


FIGURE 1-2
PROJECT AREA MAP
Guadalupe River Project
San Jose, California

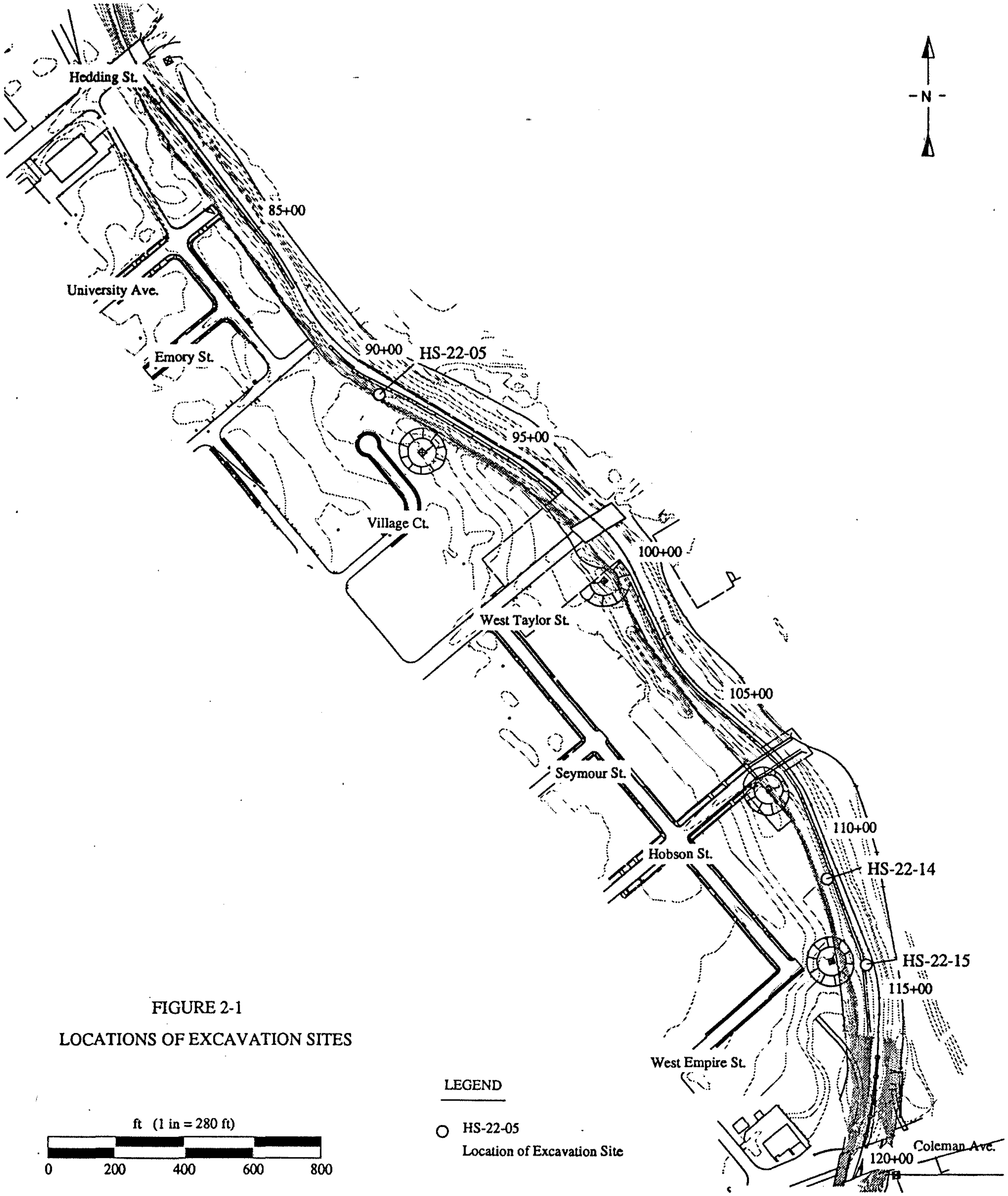
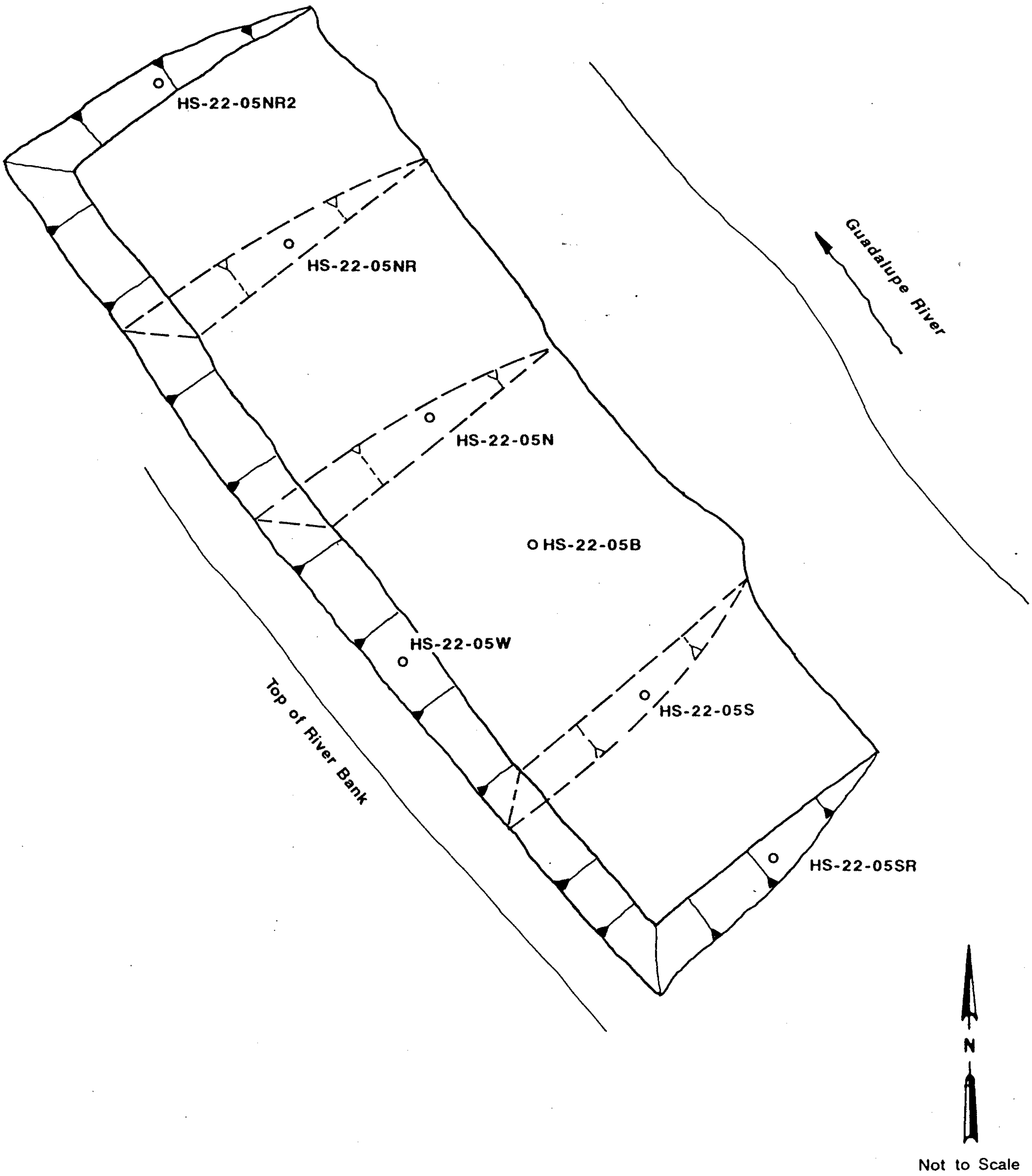


FIGURE 2-1
LOCATIONS OF EXCAVATION SITES



EXPLANATION

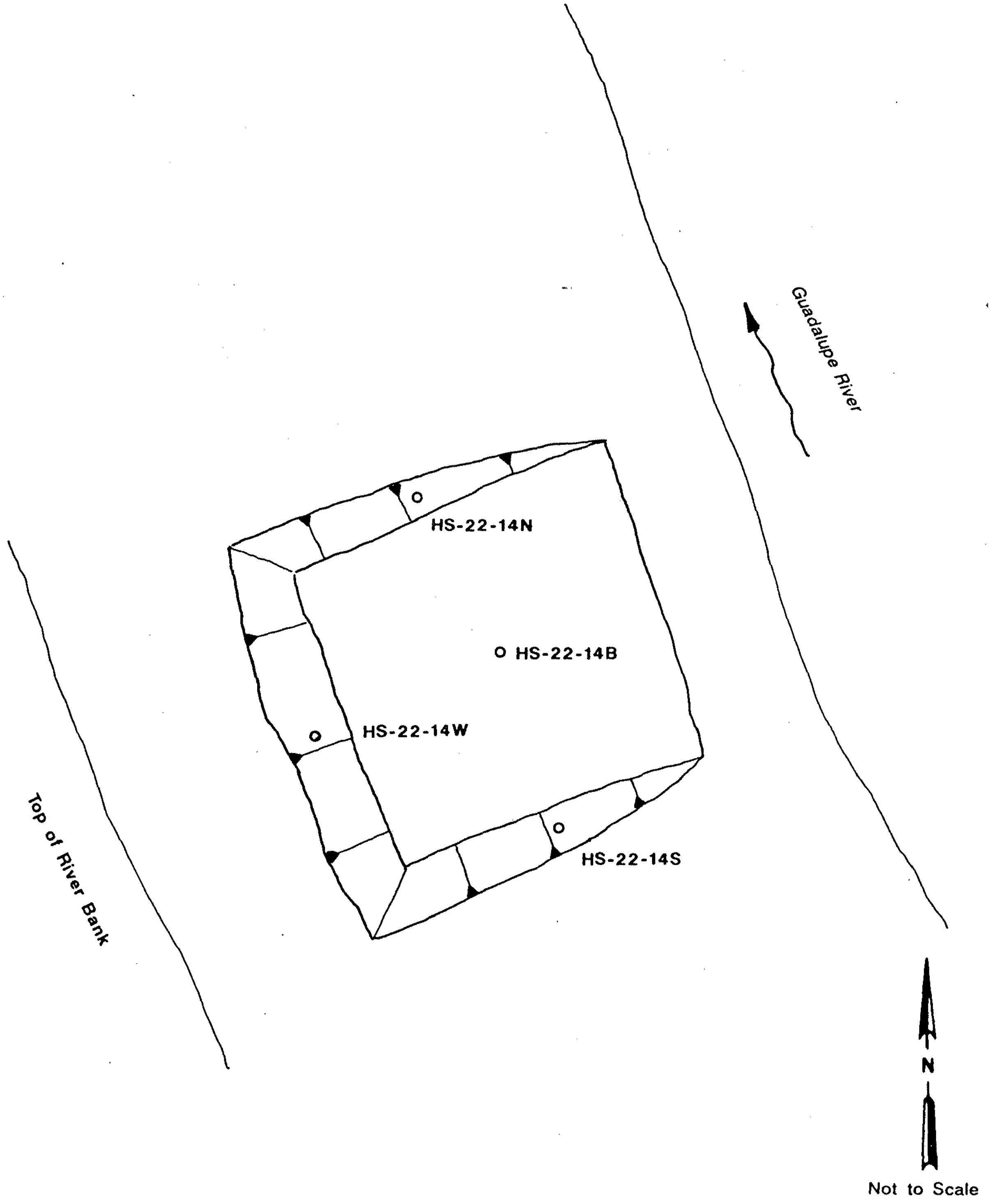
○ **HS-22-05NR** Confirmation Sample Location

Final Excavation Lines

Interim Excavation Lines

FIGURE 2-2
HS-22-05 SAMPLING SITES

Guadalupe River Project
San Jose, California



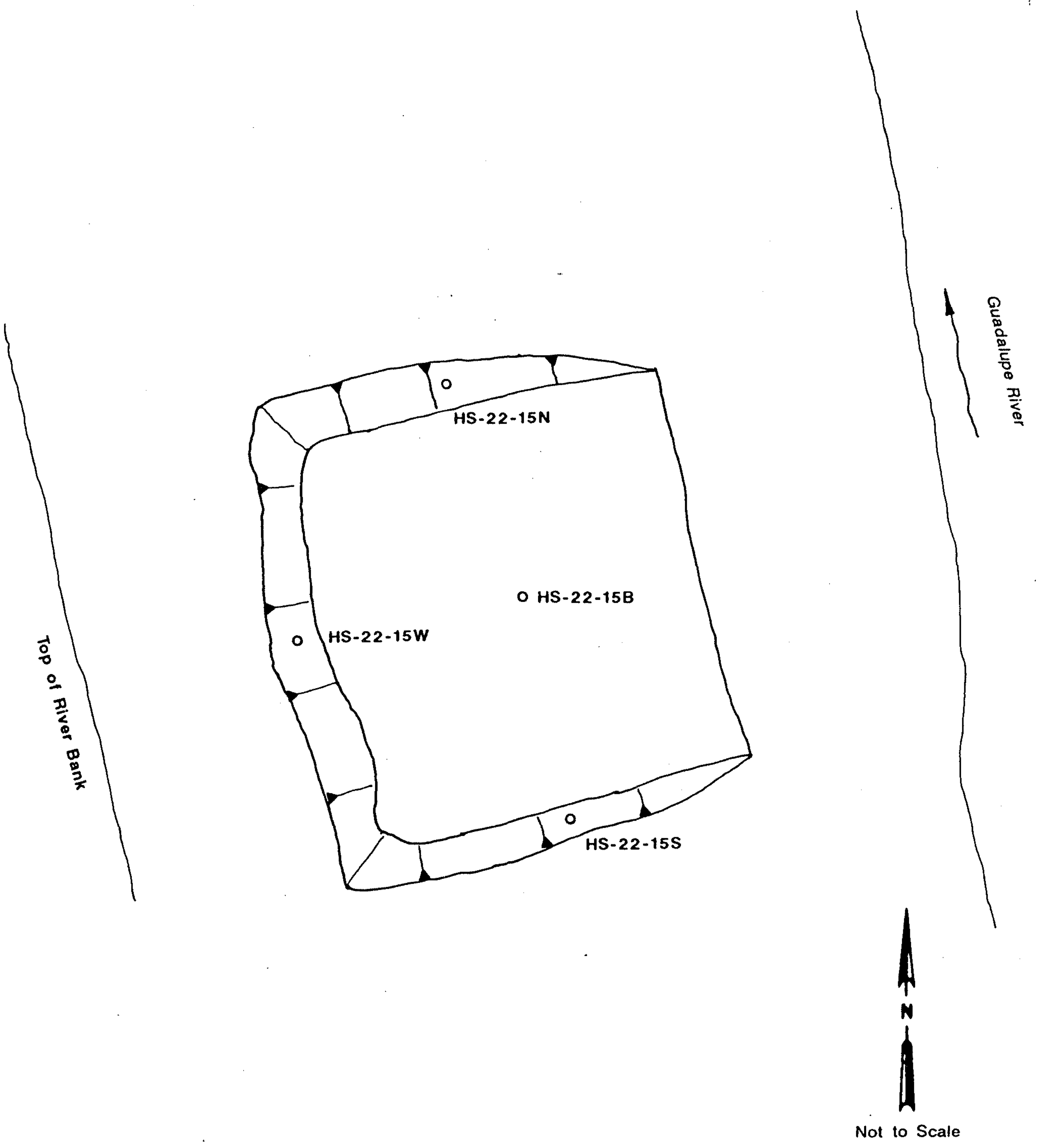
EXPLANATION

○ **HS-22-14N** Confirmation Sample Location

├─┤ Final Excavation Lines

FIGURE 2-3
HS-22-14 SAMPLING SITE
Guadalupe River Project
San Jose, California

CH2M HILL



EXPLANATION

O **HS-22-15S** Confirmation Sample Location

Final Excavation Lines

FIGURE 2-4
HS-22-15 SAMPLING SITE

Guadalupe River Project
San Jose, California

APPENDIX A

STATE OF CALIFORNIA PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, SUITE 500
OAKLAND, CA 94612
(510) 286-1255

September 27, 1993
File No. 2188.00 (BHW)

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Mr. Beau Goldie
Supervising Civil Engineer
Environmental Compliance Division
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118-3686

SUBJECT: Final Soil Management Plan, Reach 2 - Guadalupe River Project, San Jose

Dear Mr. Goldie:

We have reviewed the August 26, 1993, report entitled "Soil Management Plan, Guadalupe River Flood Control Project, Construction Reach 2"; submitted by CH2M Hill on your behalf. This report incorporates verbal comments made by me and my staff at our meetings in April, June and July 1993. Based on our review, we make the following findings:

1) The Guadalupe River flood control project is a joint project of the Santa Clara Valley Water District and the US Army Corps of Engineers. As part of the project, CH2M Hill performed a Phase I environmental assessment on the area located within 500 feet of the Reach 2 portion of the project alignment through San Jose. This Phase I assessment identified 22 areas of concern.

2) Further characterization of the 22 areas during the Phase II investigation identified one additional area of concern. Based on the Phase II investigation, ten areas of concern were identified as being outside of the excavation and construction portion of the project, eight were identifed as needing specific remediation, and four were grouped into the creek channel area of concern.

3) During the flood control project, significant creek channel and bank soils will be excavated. Creek channel soil will be mixed during soil excavation with soil from adjacent areas that are not areas of concern. Thus, using samples of creek channel soil to determine appropriate soil management of all soils excavated during the project is a conservative approach.

4) Sampling and analysis of material in the creek channel identified elevated levels of Total Recoverable Petroleum Hydrocarbons (TRPH), mercury, nickel and lead. However, TRPH, mercury, and nickel were considered not constituents of concern requiring remediation of further characterization based on limited occurrence and further Waste Extraction Test (WET) analysis. No total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, benzene, toluene, ethylbenzene, or xylenes were detected.

5) Lead was identified as a constituent of concern and was evaluated to determine whether it was hazardous. While total lead sample results were not above hazardous material criteria, numerous samples had total lead results such that soluable lead levels could exceed the Soluble Threshold Limit Concentration (STLC) of 5 mg/l and be considered hazardous material. These samples were further analyzed using the WET test.

Three of the soil samples analyzed had lead results exceeding the STLC. Approximately 20 cubic yards of soil from these three areas will be removed in advance of construction and disposed of at a Class 1 facility. Confirmatory sampling will be conducted in these areas to insure that all hazardous soil is excavated and properly disposed.

6) The "Designed Level Methodology" was used to evaluate whether any soil containing lead below hazardous material criteria could pose water quality concerns. Using an attenuation factor of 100 and the Federal Maximum Contaminant Level of 0.015 mg/l for lead, the designated level for lead was set at 1.5 mg/l.

Use of an attenuation factor of 100 appears conservative because the solubility of lead in water with a neutral or basic pH, such as occurs at and around Reach 2, is low. The pH range of groundwater sampled in the area was 6.9 to 7.4, and the pH range of soil sampled from the creek channel was 7.5 to 8.8.

Six WET test extractions using deionized water as an extraction medium were performed on soil samples with elevated total lead levels. The results of all of these extractions indicated no detectable amounts of lead in the extract.

While use of deionized water as an extraction medium may not always approximate the conditions of the final placement of the soil extracted from the creek channel, the conservative attenuation factor and the non-detectable levels indicate that the soils sampled need not be considered designated waste. As such, the non-hazardous soil to excavated from the creek channel may be considered inert.

Based on the soil characterizations described in the report and the above findings, I concur that the appropriate soil management options for the soil excavated from the creek channel are standard reuse or disposal practices for non-hazardous material and offsite disposal at a Class 1 facility for hazardous material. Further, since soil classified as hazardous will be excavated prior to construction, project specifications need only address non-hazardous material. No special requirements are needed for managing the non-hazardous material.

Please submit a technical report to this office documenting completion of the removal of the hazardous material. This report should include a description of the amount of material excavated, the locations where the material was excavated and where confirmatory samples were collected, and the results of the confirmatory sampling.

Additionally, on a quarterly basis, please submit a status report to this office on the remediation progress at the 18 areas of concern in Reach 2 that are not part of the creek channel soil management plan. The first quarterly status report should be submitted by December 31, 1993.

Please be aware that this is a formal requirement for technical reports pursuant to California Water Code Section 13267. Failure to respond or late response to this requirement may subject you to civil liability imposed by the Board to a maximum amount of $1000 per day. Any extensions of the time deadlines set forth above must be confirmed in writing by Board staff.

If you have any questions about this matter, please contact Bruce Wolfe at 510-286-0787.

Sincerely,

Steven R. Ritchie
Executive Officer

Stephen Morse

Stephen I. Morse
Division Chief,
South Bay Division

cc: Lee Esquibel, SCCHD
Gary Lynch, City of San Jose
Eileen Fanelli, CH2M Hill

APPENDIX B

MEMORANDUM CH2M HILL

TO: Madeline Wall/SFO

COPIES: Eileen Fanelli/SFO

FROM: John Lowe/SAC

DATE: February 14, 1994

SUBJECT: Advisory Levels in Soil for Selection of Personal Protective Equipment

PROJECT: BAE35510.58.00

Introduction

This memorandum presents the calculation of advisory levels for chemicals detected in soil at the former Village Court and Hedding Street dump sites adjacent to the Guadalupe River, in San Jose, California. The purpose of these soil advisory levels is to evaluate the suitability of Level D personal protective equipment (PPE) for future construction activities in these areas. Workers equipped in Level D protection may enter and work in areas with chemical concentrations in soil that fall below these advisory levels. Soil advisory levels were estimated for selected metals (lead, copper and nickel), Total Recoverable Petroleum Hydrocarbons (TRPH) and polynuclear aromatic hydrocarbons (PNAs).

A specific set of assumptions were used in calculating these soil advisory levels. These soil advisory levels are applicable for the purpose of identifying areas along the Guadalupe River corridor where work can be performed in Level D protection to the extent that the assumptions reflect conditions that would be encountered in work areas along the corridor. Should conditions in work areas vary from these assumptions, these soil advisory levels may not be applicable for this purpose.

Assumptions

The principal assumptions used in developing these soil advisory levels were as follows:

- The pathway of exposure from soil to workers is inhalation of dust generated during construction.
- The concentration of dust in a worker's breathing zone air would be at or less than one-half of the Cal/OSHA Permissible Exposure Limit (PEL) for nuisance dust (8 CCR 5155). The nuisance dust PEL is 10 mg/m^3 total dust, based on an eight-hour time-weighted average exposure duration for each working day, therefore, the concentration of dust in a worker's breathing zone would be 5 mg/m^3 or less.

- Dust concentrations in air originate entirely from soil where chemical contaminants were detected.
- Concentrations of chemical contaminants, considered to be carcinogenic, that are bound to dust are associated with an excess lifetime cancer of 1×10^{-5} or less.
- Concentrations of chemical contaminants, considered to be noncarcinogenic, that are bound to dust are associated with a noncancer hazard quotient of one or less. A hazard quotient is calculated as the ratio of the chemical intake from dust inhalation to a reference dose (RfD).[1]
- The duration of worker exposure is assumed to be 5 years (this accounts for potential exposure to contaminants in soil at projects other than the Guadalupe River project).
- The frequency of worker exposure is assumed to be 220 days/year (this accounts for potential exposure to contaminants in soil at projects other than the Guadalupe River project).
- Carcinogenic PNAs are all assumed to have the same potency as benzo(a)pyrene.
- Noncarcinogenic PNAs are all assumed to have the same toxicity as naphthalene.

Chemical concentrations in soil that could produce an inhalation exposure concentration associated with an excess lifetime cancer of 1×10^{-5} or less, or a noncancer hazard quotient of one or less, were calculated using these assumptions.

Rationale for Assumptions

Other possible pathways of exposure from soil to workers are dermal contact with soil, incidental ingestion of soil and inhalation of volatile organic compounds (VOCs) emitted from soil. Exposures from dermal contact with soil and soil ingestion are assumed to be precluded or mitigated through the use of PPE (specifically, work boots, coveralls, and rubber gloves), and adherence to certain personal hygiene practices (prohibition of smoking or eating in the work area, and washing face and hands prior to smoking or eating).

---

[1] RfDs are health-based criteria used in evaluating noncarcinogenic effects. RfDs are based on the assumption that thresholds exist for certain toxic effects such as liver or kidney damage, but may not exist for other toxic effects such as carcinogenicity.

Emissions of VOCs are not likely to be a significant pathway of exposure. Most PNAs, and weathered petroleum hydrocarbon constituents, have relatively small vapor pressures, and exhibit little tendency to volatilized into the air.

The 1×10^{-5} excess lifetime cancer risk level is the no-significant-risk level defined under Proposition 65. Under California regulations, warnings must be provided to exposed individuals for exposures that exceed the no-significant-risk level.

The total period of time that a worker could have contact with soil at the Hedding Street and Village Court sites during the Guadalupe River Project estimated to be is approximately 100 days. (Although the Reach 2 construction is estimated to require 2 years to complete, work in the immediate vicinity of the Village Court and Hedding Street sites is not expected to exceed 100 days.) However, risk assessment methods are based on estimating risks associated with long-term exposures, and are not intended to estimate exposures over short durations of time. The approach presented here for estimating soil advisory levels involves: 1) estimating the total duration a worker is likely to be involved with construction work; 2) using the conservative assumption that this worker could come into contact with contaminated soil each day of this total duration. This approach assures that exposures potentially occurring during the Guadalupe River project are not a significant fraction of a worker's total exposure. This approach is conservative, because there is a low likelihood of a construction encountering contaminated soil every work day.

In 1991, the median time that a male construction worker in the U.S. spent with one employer was 5.3 years (Bureau of Labor Statistics, 1993). The number of 8-hour work days per year for a construction worker in California, calculated from census data, is approximately 217 days/year (Bureau of Census, 1990). These two values were rounded to obtain the exposure duration (5 years) and exposure frequency (220 days/year) used in calculating the soil advisory levels.

PNAs assumed to be carcinogenic are:

- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)flouranthene
- Chrysene

- Dibenz(a,h)anthracene
- Indeno(1,2,3-cd)pyrene

All carcinogenic PNAs were assumed to have the same carcinogenic potency as benzo(a)pyrene. This is a conservative assumption (that tends to result in the calculation of lower advisory levels), because with the exception of dibenz(a,h)anthracene, all of these PNAs have lower carcinogenic potencies than benzo(a)pyrene. Dibenz(a,h)anthracene is considered equally potent a carcinogen as benzo(a)pyrene. This simplifying assumption permits calculation of a single advisory level for all carcinogenic PNAs in soil.

PNAs assumed to be noncarcinogenic are:

- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(g,h,i)perylene
- Fluoranthene
- Fluorene
- Naphthalene
- Phenanthrene
- Pyrene

All noncarcinogenic PNAs were assumed to have the same RfD as naphthalene. This is a conservative assumption because naphthalene has the lowest RfD. This is a conservative assumption that tends to result in the calculation of lower advisory levels. This simplifying assumption permits calculation of a single advisory level for all noncarcinogenic PNAs in soil.

Toxicity criteria are not available to estimate advisory levels for lead. The advisory level for lead is 1,000 mg/kg, and is based on EPA's Soil Lead Cleanup Guidance (EPA, 1991), which recommends cleanup levels in soil ranging from 500 to 1,000 mg/kg. The EPA guidance levels are intended to protect the most sensitive populations, young children, from adverse neurobehavioral effects associated with lead exposure. Therefore, the 1,000 mg/kg concentration should be adequate as a soil advisory level.

Based on the assumptions developed in this memorandum, a concentration of 1,000 mg/kg lead in soil would not trigger the requirements under the federal Occupational Safety and Health Administration (OSHA) rule for lead exposure in construction (29 CFR 1926.62), or the corresponding state of California rule (California Code of Regulations, Title 8, Section 1531). Controlling dust emissions during construction, from soil with lead contamination of 1,000 mg/kg or lower, to 1/2 of the nuisance dust PEL (5 mg/m^3) would result in a concentration of lead in air of 5 ug/m^3. Construction specifications for the Guadalupe River Project will require dust monitoring, and control of dust emissions to the nuisance dust PEL. Thus, under any expected conditions that would be encountered at the project, worker exposures to lead are expected to remain below the action level of 30 ug/m^3 in air.

Toxicity criteria are not available to estimate advisory levels for TRPH. The approach for developing advisory levels for TRPH involved the following assumptions:

- TRPH residues in soil are assumed to have originated from engine lubricating oils.
- The total PNA content of used engine lubricating oils is assumed to not exceed one percent, based on data presented in IARC, 1984.
- The toxicity of TRPH residues is proportional to the toxicity of the PNA content.

Therefore, a TRPH soil advisory level can be derived from the lowest advisory level calculated for PNAs. If the PNA advisory level is 20 mg/kg, then the TRPH advisory level is 20/0.01 or 2,000 mg/kg.

All other assumptions used in calculating the advisory levels are standard default assumptions recommended by U.S. Environmental Protection Agency, Region IX (EPA, 1993). Sample calculations are presented in Attachment 1. A spreadsheet documenting these calculations is presented in Attachment 2.

Results

The soil advisory levels for the former Village Court and Hedding Street dumpsites adjacent to the Guadalupe River are presented in Table 1.

Table 1
Soil Advisory Levels for Selection of Personal Protective Equipment
Guadalupe River Project,
Hedding Street and Village Court Sites

Chemical	Soil Advisory Level (mg/kg)
Lead	1,000
Copper	42,900
Nickel	23,000
Carcinogenic PNAs	22
Noncarcinogenic PNAs	4,640
TRPH	2,200

The soil advisory level for PNAs is much lower for carcinogenic PNAs than noncarcinogenic PNAs. In comparing sampling and analytical data to the advisory levels for purposes of selecting PPE, the most conservative advisory level (22 mg/kg) should be used.

As discussed previously, emissions of VOCs to air were assumed to not be a significant pathway of exposure in developing these soil advisory levels. This assumption was evaluated by estimating the emissions and concentrations in air of naphthalene, the most volatile PNA constituent with the lowest RfD, and the surrogate for noncarcinogenic PNAs in soil. For carcinogenic PNAs, the emissions and concentrations in air of benzo(a)pyrene (the surrogate for carcinogenic PNAs) were evaluated using this model.

Concentrations in air associated with volatilization of contaminants from soil were estimated using modeling techniques developed for PCBs in soil by EPA (Hwang and Falco, 1986; EPA, 1986; EPA, 1991b). In calculating contaminant concentration air, the initial task is to estimate the emissions rates from soil. Since the chemical concentrations in soil will change over time, as the chemical undergoes biodegradation or is depleted by volatilization from soil, the instantaneous (or transient) emission rate is obtained by solving a partial differential equation based on a chemical mass balance in the soil column. Integration of this equation resulted in a form that is used to calculate the average emission rate over a specific period of time. The concentration in air from emissions from a specified area of contaminated soil is then estimated using a box model.

The assumptions inherent in this emissions model are:

- Concentration of contaminant is assumed at or below saturation. There is no free product (pure liquid phase) in the soil.
- Contaminant concentration is assumed to be homogenous laterally and vertically throughout the area
- There is no clean layer of soil over the contamination

Conservative default assumptions recommended by EPA (EPA, 1991b; EPA, 1993) were used in this model.

Using this model, a concentration of 450 mg/kg naphthalene in soil produces a concentration in air equivalent to its RfD (0.023 mg/m^3). While this concentration in soil is lower than the value presented in Table 1 for noncarcinogenic PNAs, it is greater than the 22 mg/kg value recommended as the soil advisory level for total PNAs. For carcinogenic PNAs, a concentration of 22 mg/kg benzo(a)pyrene in soil corresponds to a concentration of 0.0000367 mg/m^3 in air. This concentration in air corresponds to an increased lifetime cancer risk of 3 x 10^{-6}. Based on these calculations, VOC emissions from soil would not be a significant pathway of exposure with an advisory level of 22 mg/kg for PNAs.

References

Bureau of Census. 1990. Census of Construction Industries (1987). Industry Series. Excavation Work, Special Trade Contractors, industry 1794. U.S. Department of Commerce, Bureau of Census. Washington, D.C.

Bureau of Labor Statistics. 1992. Bureau of Labor Statistics New, "Employee Tenure and Occupational Mobility in the Early 1990s". USDL 92-386. U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. July 26, 1992.

Hwang, S.T. and J.W. Falco. 1986. Estimation of multimedia exposures related to hazardous waste facilities, in *Pollutants in a Multimedia Environment.* Ed. Y. Cohen. Plenum Press, New York.

U.S. Environmental Protection Agency. 1986. *Development of Advisory Levels for Polychlorinated Biphenyls (PCBs) Cleanup.* Office of Health and Environmental Assessment. Washington, D.C. EPA 600/6-86/002.

U.S. Environmental Protection Agency. 1991b. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals).* Interim, December 1991. OSWER Directive 9285.7-01B. Office of Solid Waste and Emergency Response. Washington, D.C.

U.S. Environmental Protection Agency. 1991. Update on OSWER Soil Lead Cleanup Guidance. Memorandum from Don R. Clay, Office of Solid Waste and Emergency Response. August 29, 1991.

U.S. Environmental Protection Agency. 1993. Region IX Preliminary Remediation Goals (PRGs), Fourth Quarter, 1993. November 1, 1993.

IARC. 1984. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Volume 33. Polynuclear Aromatic Compounds, Part 2, Carbon Blacks, Mineral Oils and Some Nitroarenes. International Agency for Research on Cancer. Lyon, France. April 1984.

Attachment 1
Calculation Methods

Risk-based Concentrations in Air for Carcinogens

Risk-based concentrations in air for carcinogens are calculated using the following equation:

$$C = \frac{TR \times BW \times AT \times 365\,days/year}{SF_i \times ED \times EF \times IR_a} \tag{1}$$

Where:

Parameter	Description	Units	Value
C	Chemical concentration in air	mg/m^3	calculated
TR	Target increased lifetime cancer risk	unitless	10^{-5}
SF_i	Inhalation slope factor	$(mg/kg\text{-}day)^{-1}$	chemical-specific
BW	Body weight	kg	70
AT	Averaging time	years	70
ED	Exposure duration	years	5
EF	Exposure frequency	days/year	220
IR_a	Daily inhalation rate	m^3/day	20

Risk-Based Concentrations for Noncarcinogens

Risk-based concentrations for noncarcinogens are calculated using the following equation:

$$C = \frac{THI \times BW \times AT \times 365\,days/year}{ED \times EF \times \frac{1}{RfD_i} \times IR_a} \tag{2}$$

Where:

Parameter	Description	Units	Value
C	Chemical concentration in air	mg/m^3	calculated
THI	Target Hazard Index	unitless	1.0
RfD_i	Inhalation Reference Dose	mg/kg-day	chemical-specific
AT	Averaging time	years	5
ED	Exposure duration	years	5
EF	Exposure frequency	days/year	220
IR_a	Inhalation rate	m^3/day	20

Conversion of Concentration in Airborne Dust to Concentration in Soil

The risk-based concentration in airborne dust is converted to the equivalent concentration in source soil as follows:

$$C_{soil} = \frac{C_{chem air}}{C_{dust air} \times CF} \qquad (3)$$

where

Parameter	Description	Units	Value
C_{soil}	Chemical concentration in soil (advisory level)	mg/kg	calculated
$C_{chem\ air}$	Risk-based chemical concentration in air	mg/m^3	calculated
$C_{dust\ air}$	Dust concentration in air	mg/m^3	5
CF	Conversion factor	kg dust/mg dust	1×10^{-6}

APPENDIX C

BG

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 24-NOV-93
Lab Job Number: 113276
Project ID: 93-75-3-3015-107
Location: Guadalupe River

Reviewed by: Teresa K. Morrison

Reviewed by:

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CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-75-3-3015-107
LOCATION: Guadalupe River
MATRIX: Soil

DATE REPORTED: 11/24/93

METALS ANALYTICAL REPORT

				Lead				
Sample ID	Lab ID	Sample Date	Receive Date	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
HS-22-15B	113276-001	11/19/93	11/22/93	54	5.0	11576	EPA 7420	11/23/93
HS-22-15N	113276-002	11/19/93	11/22/93	81	4.9	11576	EPA 7420	11/23/93
HS-22-15S	113276-003	11/19/93	11/22/93	86	5.0	11576	EPA 7420	11/23/93
HS-22-15W	113276-004	11/19/93	11/22/93	100	5.0	11576	EPA 7420	11/23/93
HS-22-05B	113276-005	11/19/93	11/22/93	39	5.0	11576	EPA 7420	11/23/93
HS-22-05N	113276-006	11/19/93	11/22/93	350	5.0	11576	EPA 7420	11/23/93
HS-22-05S	113276-007	11/19/93	11/22/93	680	9.8	11576	EPA 7420	11/23/93
HS-22-05W	113276-008	11/19/93	11/22/93	33	4.9	11576	EPA 7420	11/23/93
HS-22-14B	113276-009	11/19/93	11/22/93	69	5.0	11576	EPA 7420	11/23/93
HS-22-14N	113276-010	11/19/93	11/22/93	60	5.0	11576	EPA 7420	11/23/93
HS-22-14S	113276-011	11/19/93	11/22/93	120	5.0	11576	EPA 7420	11/23/93
HS-22-14W	113276-012	11/19/93	11/22/93	56	4.9	11576	EPA 7420	11/23/93

Curtis & Tompkins, Ltd

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113276

DATE REPORTED: 11/24/93

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Lead	2000	1770	1670	ug/L	89	84	87	6	11576	EPA 7420	11/23/93

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113276

DATE REPORTED: 11/24/93

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Lead	ND	5	mg/Kg	11576	EPA 7420	11/23/93

ND = Not detected at or above reporting limit

115016 1

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project # SFO35510
Purchase Order # SCVWD
Project Name GUAD RIVER SAMPLI
Company Name/CH2M HILL Office SFO (510)251-2426
Project Manager & Phone # Mr. [ ] Ms. [X] Dr. [ ] EILEEN FANELLI
Report Copy to: AL ATKINSON
Requested Completion Date: 11/12/93 48-HR TAT
Sampling Requirements SDWA ☐ NPDES ☐ RCRA ☒ OTHER ____
Sample Disposal: Dispose ☒ Return ☐

LAB TEST CODES

ANALYSES REQUESTED

SHADED AREA – FOR LAB USE ONLY
Lab 1 # 113276
Lab 2 #
Quote #
Kit Request #
Project # 93-75-3-3015-107
No. of Samples
Page **of**
COC Rev **Login** **LIMS Ver** **Ack Gen**

	Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Pb (TOTAL CONC.)	REMARKS	LAB 1 ID	LAB 2 ID
-1	11/19	8:30		X		X	HS-22-15B	1	X			
-2				X		X	HS-22-15N	1	X			
-3				X		X	HS-22-15S	1	X			
-4				X		X	HS-22-15W	1	X			

Sampled By & Title (Please sign and print name) JOHN RYAN
Date/Time 11/19/93
Relinquished By (Please sign and print name) John Ryan JOHN RYAN
Date/Time 12:10 11/19/93

Received By (Please sign and print name) Vanessa Fernandez VANESSA FERNANDEZ
Date/Time 1:00 11/19/93
Relinquished By (Please sign and print name) Vanessa Fernandez Vanessa Fernandez
Date/Time 3:00 11/19/93

Received By (Please sign and print name) Troy E Windsor Troy Windsor
Date/Time 11-19-93/1500
Relinquished By (Please sign and print name)
Date/Time

Received By (Please sign and print name)
Date/Time
Shipped Via UPS BUS Fed-Ex Hand Other____
Shipping #

HAZWRAP/NESSA: Y N
QC Level: 1 2 3 **Other:** ____
COC Rec **ICE**
Ana Req **TEMP**
Cust Seal **Ph**

Work Authorized By (Please sign and print name)
Remarks IF TOTAL CONC. EXCEED 10 TIMES STLC RUN ACID WETT

Instructions and Agreement Provisions on Reverse Side

113276

CH2M HILL
QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project # SFO35510
Purchase Order # SCUWD

Project Name GUAD. RIVER SAMPLING

Company Name/CH2M HILL Office SAN FRANCISCO (510)251-2426

Project Manager & Phone # Mr. ☐ Ms. ☒ Dr. ☐ EILEEN FANELLI
Report Copy to: AL ATKINSON

Requested Completion Date: 11/12/93 48-HR TAT

Sampling Requirements: SDWA ☐ NPDES ☐ RCRA ☒ OTHER ____

Sample Disposal: Dispose ☒ Return ☐

SHADED AREA – FOR LAB USE ONLY
Lab 1 # 113276
Lab 2 #
Quote #
Kit Request #
Project # 93-75-[illegible]1071
No. of Samples
Page
of
COC Rev
Login
LIMS Ver
Ack Gen

LAB TEST CODES

ANALYSES REQUESTED: Pb (TOTAL CONC)

	Sampling 93 Date	Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	Pb (TOTAL CONC)	REMARKS	LAB 1 ID	LAB 2 ID
5	11/19	9:30		X		X	HS-22-05B	1	X			
-6	11/19			X		X	HS-22-05N	1	X			
-7	11/19			X		X	HS-22-05S	1	X			
-8	11/19			X		X	HS-22-05W	1	X			
-9	11/19	9:30		X		X	HS-22-14B	1	X			
-0	11/19			X		X	HS-22-14N	1	X			
-11	11/19			X		X	HS-22-14S	1	X			
-2	11/19			X		X	HS-22-14W	1	X			

Sampled By & Title (Please sign and print name) J. RYAN & B. LOGAN
Date/Time 11/19/93

Relinquished By (Please sign and print name) John Ryan JOHN RYAN
Date/Time 2:10 11/19/93

Received By (Please sign and print name) Vanessa Fernandez Vanessa Fernandez
Date/Time 1:00 11/19/93

Relinquished By (Please sign and print name) Vanessa Fernandez Vanessa Fernandez
Date/Time 3:00 11/19/93

Received By (Please sign and print name) Troy E. Windsor Troy Windsor
Date/Time 11-19-93/1500

Relinquished By (Please sign and print name)
Date/Time

Received By (Please sign and print name)
Date/Time

Shipped Via UPS BUS Fed-Ex Hand Other____
Shipping #

Work Authorized By (Please sign and print name)

Remarks

HAZWRAP/NESSA: Y N
QC Level: 1 2 3 **Other:**

COC Rec	ICE
Ana Req	TEMP
Cust Seal	Ph

Instructions and Agreement Provisi

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

12/08 CAP w/a
BG

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 06-DEC-93
Lab Job Number: 113362
Project ID: 93-78-3-3015
Location: Guadalupe River

Reviewed by: Teresa K. Morrison

Reviewed by: Kathy OB

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CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-78-3-3015
LOCATION: Guadalupe River
MATRIX: WET Leachate

DATE REPORTED: 12/06/93

METALS ANALYTICAL REPORT

Lead

Sample ID	Lab ID	Sample Date	Receive Date	Result (ug/L)	Reporting Limit (ug/L)	QC Batch	Method	Analysis Date
HS-22-15B	113362-001	11/19/93	11/22/93	1000	100	11751	EPA 7420	12/06/93
HS-22-15N	113362-002	11/19/93	11/22/93	3200	100	11751	EPA 7420	12/06/93
HS-22-15S	113362-003	11/19/93	11/22/93	3700	100	11751	EPA 7420	12/06/93
HS-22-15W	113362-004	11/19/93	11/22/93	2900	100	11751	EPA 7420	12/06/93
HS-22-05N	113362-005	11/19/93	11/22/93	15000	1000	11751	EPA 7420	12/06/93
HS-22-05S	113362-006	11/19/93	11/22/93	28000	1000	11751	EPA 7420	12/06/93
HS-22-14B	113362-007	11/19/93	11/22/93	2300	100	11751	EPA 7420	12/06/93
HS-22-14N	113362-008	11/19/93	11/22/93	1800	100	11751	EPA 7420	12/06/93
HS-22-14S	113362-009	11/19/93	11/22/93	3400	100	11751	EPA 7420	12/06/93
HS-22-14W	113362-010	11/19/93	11/22/93	1800	100	11751	EPA 7420	12/06/93

Curtis & Tompkins, Ltd.

CLIENT: Santa Clara Valley Water District DATE REPORTED: 12/06/93
JOB NUMBER: 113362

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Lead	2000	1800	1840	ug/L	90	92	91	2	11751	EPA 7420	12/06/93

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113362

DATE REPORTED: 12/06/93

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Lead	ND	100	ug/L	11751	EPA 7420	12/06/93

ND = Not detected at or above reporting limit

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 28-DEC-93
Lab Job Number: 113695
Project ID: 93-89-3-3015-107
Location: Guadalupe River Hot Spot

Reviewed by: Teresa K Morrison

Reviewed by:

This package may be reproduced only in its entirety.

CLIENT: Santa Clara Valley Water District DATE REPORTED: 12/28/93
JOB NUMBER: 113695

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Lead	2000	2110	2020	ug/L	106	101	104	4	12007	EPA 7420	12/22/93
Antimony	500	443.1	475.6	ug/L	89	95	92	7	12050	EPA 6010	12/23/93
Barium	2000	1968	2005	ug/L	98	100	99	2	12050	EPA 6010	12/23/93
Beryllium	50	49.9	50.8	ug/L	100	102	101	2	12050	EPA 6010	12/23/93
Cadmium	50	52.1	50.7	ug/L	104	101	103	3	12050	EPA 6010	12/23/93
Chromium (total)	200	199.5	203.9	ug/L	100	102	101	2	12050	EPA 6010	12/23/93
Cobalt	500	498.6	499.7	ug/L	100	100	100	0	12050	EPA 6010	12/23/93
Copper	250	251.5	257.9	ug/L	101	103	102	3	12050	EPA 6010	12/23/93
Lead	500	510.2	531.9	ug/L	102	106	104	4	12050	EPA 6010	12/23/93
Molybdenum	400	405.6	412.7	ug/L	101	103	102	2	12050	EPA 6010	12/23/93
Nickel	500	524.4	530	ug/L	105	106	106	1	12050	EPA 6010	12/23/93
Silver	50	47.4	48.7	ug/L	95	97	96	3	12050	EPA 6010	12/23/93
Thallium	2000	2047	1994	ug/L	102	100	101	3	12050	EPA 6010	12/23/93
Vanadium	500	489.2	503.2	ug/L	98	101	100	3	12050	EPA 6010	12/23/93
Zinc	500	492.3	507.8	ug/L	99	102	101	3	12050	EPA 6010	12/23/93
rsenic	40	44.15	42.99	ug/L	110	108	109	3	12051	EPA 7060	12/28/93
Selenium	30	32.34	32.98	ug/L	108	110	109	2	12051	EPA 7740	12/28/93
Mercury	4	4.099	4.013	ug/L	103	100	102	2	12062	EPA 7470	12/28/93

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113695

DATE REPORTED: 12/28/93

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Lead	ND	5	mg/Kg	12007	EPA 7420	12/22/93
Antimony	ND	60	ug/L	12050	EPA 6010	12/23/93
Barium	ND	10	ug/L	12050	EPA 6010	12/23/93
Beryllium	ND	2	ug/L	12050	EPA 6010	12/23/93
Cadmium	ND	5	ug/L	12050	EPA 6010	12/23/93
Chromium (total)	ND	10	ug/L	12050	EPA 6010	12/23/93
Cobalt	ND	20	ug/L	12050	EPA 6010	12/23/93
Copper	ND	5	ug/L	12050	EPA 6010	12/23/93
Lead	ND	300	ug/L	12050	EPA 6010	12/23/93
Molybdenum	ND	20	ug/L	12050	EPA 6010	12/23/93
Nickel	ND	20	ug/L	12050	EPA 6010	12/23/93
Silver	ND	10	ug/L	12050	EPA 6010	12/23/93
Thallium	ND	500	ug/L	12050	EPA 6010	12/23/93
Vanadium	ND	10	ug/L	12050	EPA 6010	12/23/93
Zinc	ND	20	ug/L	12050	EPA 6010	12/23/93
Arsenic	ND	5	ug/L	12051	EPA 7060	12/28/93
Selenium	ND	5	ug/L	12051	EPA 7740	12/28/93
Mercury	ND	0.2	ug/L	12062	EPA 7470	12/28/93

ND = Not detected at or above reporting limit

LABORATORY NUMBER: 113695
CLIENT: SANTA CLARA VALLEY WATER DISTRICT
PROJECT ID: 93-89-3-3015-107
LOCATION: GUADALUPE RIVER HOT SPOT

DATE SAMPLED: 12/20/93
DATE RECEIVED: 12/20/93
DATE ANALYZED: 12/22/93
DATE REPORTED: 12/22/93

ANALYSIS: LEAD
ANALYSIS METHOD: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
113695-009	HS225NR	180	mg/Kg	5
113695-010	HS225SR	16	mg/Kg	5
METHOD BLANK	N/A	ND	mg/Kg	5

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: BS/BSD

RPD, %	5
RECOVERY, %	104

113695

'ANA[illegible] ...RATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

...2L0.5G.00	Purchase Order # SCVWD
Project Name: GUADALUPE RIVER	
Company Name/CH2M HILL Office	
Project Manager & Phone # Mr. [ ] Ms. [☒] Dr. [ ] EILEEN FANELLI	Report Copy to: AL ATKINSON

Requested Completion Date: 24 TAT

Sampling Requirements: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

Sample Disposal: Dispose ☐ Return ☐

LAB TEST CODES

SHADED AREA – FOR LAB USE ONLY

Lab 1 #: 113695
Lab 2 #:
Quote #:
Kit Request #:
Project #: 93-89-3-3015-107
No. of Samples:
Page:
of:
COC Rev:
Login:
LIMS Ver:
Ack Gen:

ANALYSES REQUESTED

Sampling Date (93)	Time	COMP	GRAB	WATER	SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	TOTAL Pb	TITLE 26 METALS WET		REMARKS	LAB 1 ID	LAB 2 ID
12/20	13:15		x		x	HS225B6a	1				-11		
	14:40		x		x	HS225B6b	1		X	COMPOSITE & TEST			
	14:40		x		x	HS225B6c	1			ONE COMPOSITE	48 TAT		
	14:40		x		x	HS225B6d	1						
	14:45		x		x	HS225B7a	1				-12		
	14:45		x		x	HS225B7b	1		X	COMPOSITE & TEST	48 TAT		
	14:55		x		x	HS225B7c	1			ONE COMPOSITE			
	14:55		x		x	HS225B7d	1						
	14:55		x		x	HS225NR	1	X			24 -TAT		
	14:55		x		x	HS225SR	1	X			24 - TAT		

Sampled By & Title (Please sign and print name): JOHN RYAN	Date/Time: 12/20/93	Relinquished By (Please sign and print name): JOHN RYAN	Date/Time: 12/20/93 3:45
Received By (Please sign and print name): Vanessa Fernandez Vanessa Fernandez	Date/Time: 12/20/93 3:41	Relinquished By (Please sign and print name): Vanessa Fernandez Vanessa Fernandez	Date/Time: 12/20/93 4:00
Received By (Please sign and print name): Gabriel Reynosa	Date/Time: 12/20/93 16:00	Relinquished By (Please sign and print name):	Date/Time:
Received By (Please sign and print name): John Gayette	Date/Time: 12/20/93 17:35	Shipped Via: UPS BUS Fed-Ex Hand Other____	Shipping #:
Work Authorized By (Please sign and print name):		Remarks: need TTLC Pb on HS22-5NR & -5SR per NA - TKM	

HAZWRAP/NESSA: Y N
QC Level: 1 2 3 Other:
COC Rec
ICE
Ana Req
TEMP
Cust Seal
Ph

Instructions and Agreement Provisions on Reverse Side

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 30-DEC-93
Lab Job Number: 113731
Project ID: 93-91-3-3015-107
Location: Guadalupe River Hot Spot

Reviewed by: Teresa K Morrison

Reviewed by:

This package may be reproduced only in its entirety.

SAMPLE ID: HS225NR
LAB ID: 113731-001
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-91-3-3015-107
LOCATION: Guadalupe River Hot Spot
MATRIX: WET Leachate

DATE SAMPLED: 12/20/93
DATE RECEIVED: 12/20/93
DATE REPORTED: 12/30/93

METALS ANALYTICAL REPORT

Compound	Result (ug/L)	Reporting Limit (ug/L)	QC Batch	Method	Analysis Date
Lead	8000	1500	12114	EPA 6010	12/30/93

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113731

DATE REPORTED: 12/30/93

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Lead	ND	1500	ug/L	12114	EPA 6010	12/30/93
Lead	ND	300	ug/L	12117	EPA 6010	12/30/93

ND = Not detected at or above reporting limit

SAMPLE ID: HS225SR
LAB ID: 113731-002
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-91-3-3015-107
LOCATION: Guadalupe River Hot Spot
MATRIX: WET DI Extract

DATE SAMPLED: 12/20/93
DATE RECEIVED: 12/20/93
DATE REPORTED: 12/30/93

METALS ANALYTICAL REPORT

Compound	Result (ug/L)	Reporting Limit (ug/L)	QC Batch	Method	Analysis Date
Lead	ND	300	12117	EPA 6010	12/30/93

ND = Not detected at or above reporting limit

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113731

DATE REPORTED: 12/30/93

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Lead	500	525.7	539.3	ug/L	105	108	107	3	12114	EPA 6010	12/30/93
Lead	500	484.6	498.3	ug/L	97	100	99	3	12117	EPA 6010	12/30/93

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 06-JAN-94
Lab Job Number: 113830
Project ID: 93-96-3015
Location: Village Court hot spots

Reviewed by: Teresa K Morrison

Reviewed by:

This package may be reproduced only in its entirety.

SAMPLE ID: HS-22-5NR2
LAB ID: 113830-001
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-96-3015
LOCATION: Village Court hot spots
MATRIX: Soil

DATE SAMPLED: 01/04/94
DATE RECEIVED: 01/04/94
DATE REPORTED: 01/06/94

METALS ANALYTICAL REPORT

Compound	Result (mg/Kg)	Reporting Limit (mg/Kg)	QC Batch	Method	Analysis Date
Lead	11	4.9	12188	EPA 7420	01/06/94

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113830

DATE REPORTED: 01/06/94

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Lead	2000	1810	1840	ug/L	91	92	92	2	12188	EPA 7420	01/06/94

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113830

DATE REPORTED: 01/06/94

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysis Date
Lead	ND	5	mg/Kg	12188	EPA 7420	01/06/94

ND = Not detected at or above reporting limit

CHAIN OF CUSTODY

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118
(408) 265-2600

FC 1019 (07-23-90)

Site Name: Hot Spot HS-22-5
LABORATORY: Curtis & Tompkins Ltd.
Incident ID#:
Sampled by (Print): Nedhal Ali-Adeeb
Scope Number: 3-3015-107
Requested By: Nedhal Ali-Adeeb
Site Location: Guad. River Proj, San Jose

93-96-3015

Sample ID#	Date Sampled	Time Sampled	Matrix	No. of Samples	Turn Around Time	Analyses Requested →	EPA 624	EPA 625	Lead (Pb)						Preservation	REMARKS
HS-22-5-NRS	1/4/94	1212	Soil	1	24hrs				✓						None	C.T# 113830-1

MATRIX ABBREVIATION - Soil = S; Water = W; Product = P

Laboratory shall sign upon receipt and return a copy of this form with laboratory results.

Relinquished By (Signatures)/Affiliation:	Received By (Signatures)/Affiliation:	Date	Time
/ SCVWD	Markland / C.E.	1/4/94	1321
PRIORITY EXPRESS	Teresa K Morrison / C&T	1/4/94	1645

Distribution: Original - RETURN TO DISTRICT WITH RESULTS, Pink - Laboratory, Yellow - District

Page 1 of 1

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

ANALYTICAL REPORT

Prepared for:

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Date: 19-JAN-94
Lab Job Number: 113889
Project ID: 93-97-3015
Location: Village Court hot spots

CAROL -
This was originally
issued w/ the wrong
project #! (was 93-96-3015)
Sorry!
Teresa

by: Teresa K Morrison

Reviewed by:

This package may be reproduced only in its entirety.

SAMPLE ID: HS-22-5NR2
LAB ID: 113889-001
CLIENT: Santa Clara Valley Water District
PROJECT ID: 93-97-3015
LOCATION: Village Court hot spots
MATRIX: WET DI Leachate

DATE SAMPLED: 01/04/94
DATE RECEIVED: 01/04/94
DATE REPORTED: 01/19/94

METALS ANALYTICAL REPORT

Compound	Result (ug/L)	Reporting Limit (ug/L)	QC Batch	Method	Analysis Date
Lead	ND	100	12313	EPA 7420	01/13/94

ND = Not detected at or above reporting limit

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113889

DATE REPORTED: 01/19/94

BATCH QC REPORT
PREP BLANK

Compound	Result	Reporting Limit	Units	QC Batch	Method	Analysi Date
Lead	ND	100	ug/L	12313	EPA 7420	01/13/9

ND = Not detected at or above reporting limit

CLIENT: Santa Clara Valley Water District
JOB NUMBER: 113889

DATE REPORTED: 01/19/94

BATCH QC REPORT
BLANK SPIKE/BLANK SPIKE DUPLICATE

Compound	Spike Amount	BS Result	BSD Result	Units	BS % Recovery	BSD % Recovery	Average Recovery	RPD	QC Batch	Method	Analysis Date
Lead	2000	1950	1950	ug/L	98	98	98	0	12313	EPA 7420	01/13/94

PACIFIC ENVIRONMENTAL LABORATORY

For: Santa Clara Valley Water District
Attention: Ms. Carol Presley
Address: 5750 Almaden Expressway
San Jose, CA 95118

Date Reported: 03/04/93
Page: 1

Date Received: 03/03/93
Date Analyzed: 03/03-04/93

Source: 2211 SCVWD – Guadalupe
Project No.: SFO35510.22

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
DK02043	SS-22-1	1040	03/02/93	19	49	68
DK02044	SS-22-2	1100	03/02/93	30	60	96
DK02045	SS-22-3	1150	03/02/93	29	61	95
DK02046	SS-22-4	1330	03/02/93	16	15	120
DK02047	SS-22-5	1345	03/02/93	35	230	78
DK02048	SS-22-6	1410	03/02/93	20	20	45
DK02049	SS-22-7	1425	03/02/93	20	25	48
DK02050	SS-22-8	1450	03/02/93	17	37	57

Source: Guadalupe River
Project No.: SFO35510.00

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
DK02051	SB-15-2B	1000	03/02/93	14	5	45
DK02052	SB-15-2C	1100	03/02/93	28	6	39
DK02053	SB-15-1A	1310	03/02/93	33	11	120
DK02054	SB-15-1B	1330	03/02/93	14	5	37
DK02055	SB-15-1C	1345	03/02/93	20	11	46

Source: Guadalupe
Project No.: SFO35510.22

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
DK02056	TP-3-3-a	1345	03/02/93	29	310	50
DK02057	TP-3-3a-a	1430	03/02/93	28	110	59
DK02058	TP-3-4-a	1245	03/02/93	49	130	260
DK02059	TP-3-4a-a	1320	03/02/93	33	86	120
DK02060	TP-3-8-a	1050	03/02/93	46	99	210

DETECTION LIMITS (mg/Kg)

Copper = 1
Lead = 2
Nickel = 1

Analyst Kim Noyes

Manager

PACIFIC ENVIRONMENTAL LABORATORY

For: Santa Clara Valley Water District
Attention: Ms. Carol Presley
Address: 5750 Almaden Expressway
San Jose, CA 95118

Date Reported: 03/08/93
Page: 1

Date Received: 03/04/93
Date Analyzed: 03/04--08/93

Source: 2211 SCVWD -- Guadalupe
Project No.: SFO35510.22.03

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
DK02128	MW-3-2B	0910	03/03/93	21	11	67
DK02129	MW-3-2C	1000	03/03/93	16	9	37
DK02130	MW-3-2D	1020	03/03/93	17	6	23
DK02131	MW-3-1A	1455	03/03/93	29	13	110
DK02148	MW-3-1C	1520	03/03/93	41	12	57

Source: Guadalupe River
Project No.: SFO35510.22.22

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
DK02132	SS-22-9	0940	03/03/93	59	63	120
DK02133	SS-22-10	1030	03/03/93	27	23	69
DK02134	SS-22-11	1055	03/03/93	25	30	79
DK02135	SS-22-12	1120	03/03/93	23	25	67
DK02136	SS-22-13	1145	03/03/93	29	46	78
DK02137	SS-22-14	1400	03/03/93	34	120	84
DK02138	SS-22-15	1420	03/03/93	53	180	81
DK02139	SS-22-16	1450	03/03/93	29	35	73
DK02140	SS-22-17	1520	03/03/93	22	24	47

Source: Guadalupe
Project No.: SFO35510.22.03

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/Kg)	Lead (mg/Kg)	Nickel (mg/Kg)
DK02141	TP-3-9-a	1030	03/03/93	130	240	120
DK02142	TP-3-9A-a	1345	03/03/93	33	150	67
DK02143	TP-3-11-a	1145	03/03/93	600,000	150	400
DK02144	TP-3-11-b	1230	03/03/93	190	370	60

DETECTION LIMITS (mg/Kg)

Copper = 1
Lead = 2
Nickel = 1

Analyst Kim Noyes ____________

Manager

PACIFIC ENVIRONMENTAL LABORATORY

For: Santa Clara Valley Water District
Attention: Ms. Carol Presley
Address: 5750 Almaden Expressway
San Jose, CA 95118

Date Reported: 04/08/93
Page: 1

Date Requested: —
Date Extracted 03/31-04/02/93
Date Analyzed: 04/02/93

Source: Guadalupe River
Project No.:

WET EXTRACT

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/L)	Lead (mg/L)	Nickel (mg/L)	Final pH of sample
DK02047	SS-22-5	1345	03/02/93	--	12	--	4.7
DK02144	TP-3-11-b	1230	03/03/93	--	14	--	5.9
DK02201	SS-18-3	1415	03/04/93	--	2.4	--	7
DK02203	SS-18-1	1500	03/04/93	--	16	—	4.9
DK02298	TP-3-5-a	1115	03/05/93	--	78	—	5.5
DK02301	TP-H-1-a	1545	03/05/93	--	57	—	5.1
DK02302	TP-3-6-a	0915	03/05/93	--	94	—	5.2
DK02304	TP-3-10-a	1000	03/05/93	--	0.3	—	4.9
WET Control Blank	--	--	--	--	<0.2	--	4.6

Analytical Method: Calif. Admin. Code Title 22, Para. 66700

WET CONTROL DETECTION LIMITS (mg/L)

Lead = 0.2

Analyst Kim Noyes

Manager

PACIFIC ENVIRONMENTAL LABORATORY

For: Santa Clara Valley Water District
Attention: Ms. Carol Presley
Address: 5750 Almaden Expressway
San Jose, CA 95118

Date Reported: 04/13/93
Page: 1

Date Requested: 03/31/93
Date Extracted 04/05--07/93
Date Analyzed: 04/08--09/93

Source: Guadalupe River
Project No.: SFO35510

WET EXTRACT

PEL Sample #	Sample I.D.	Time Collected	Date Collected	Copper (mg/L)	Lead (mg/L)	Nickel (mg/L)	Final pH of sample
DK02132	SS-22-9	--	03/03/93	--	2.4	--	4.7
DK02137	SS-22-14	--	03/03/93	--	5.8	--	4.7
DK02194	SS-22-21	--	03/04/93	--	3.3	--	4.8
DK02289	SS-22-33	--	03/05/93	9.4	--	--	4.7
DK02291	SS-22-35	--	03/05/93	6.3	--	--	4.8
DK02060	TP-3-8	--	03/02/93	--	--	6.9	4.9
WET Control Blank	--	--	--	<0.06	<0.3	<0.1	4.7

Analytical Method: Calif. Admin. Code Title 22, Para. 66700

WET CONTROL DETECTION LIMITS (mg/L)

Copper = 0.06
Lead = 0.3
Nickel = 0.1

Analyst Kim Noyes

Manager